User Manual

V 2.0.1

DL-100TMS-ZT

(ZigBee Temperature and Humidity Module)



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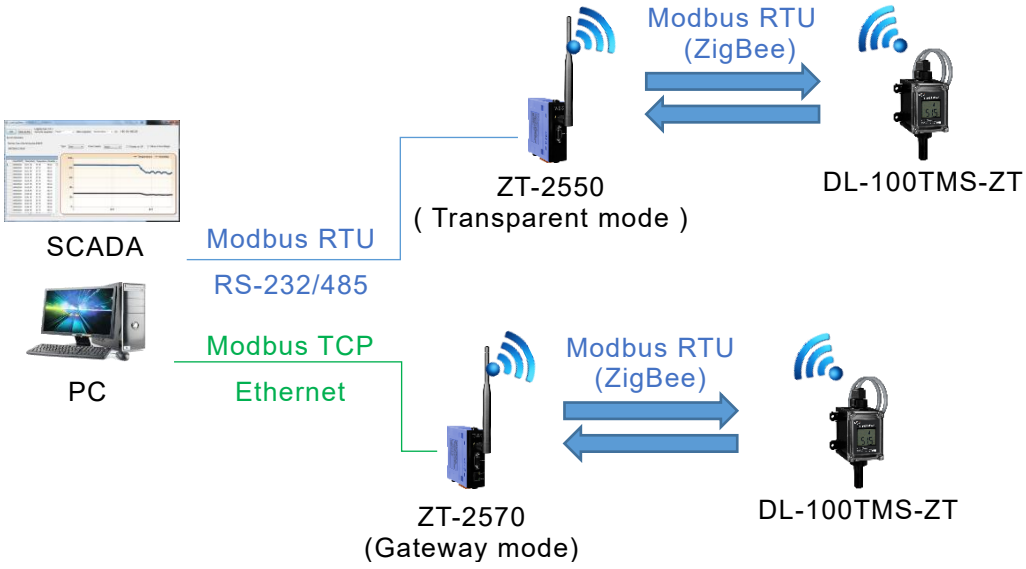
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1. Product description

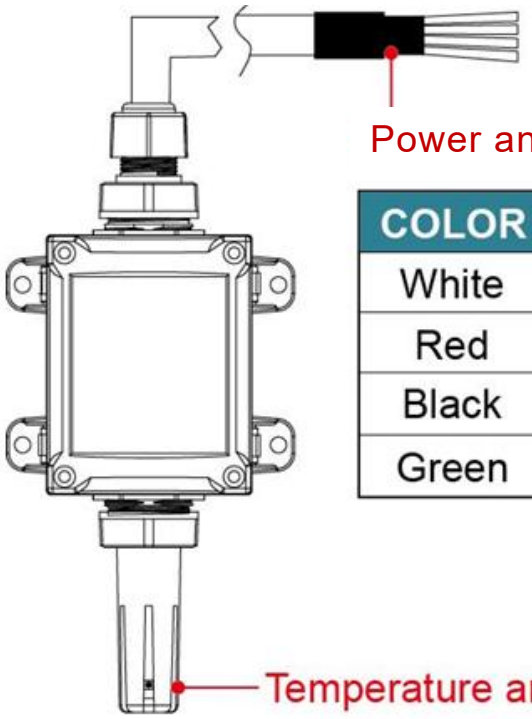
1.1 Introduction

DL-100TMS-ZT is a temperature and humidity logging module that can regularly detect and log temperature and humidity according to the parameters set by the user, and display temperature, humidity, dew point temperature, wireless parameters and other information sequentially on the screen. In addition, this module supports Modbus RTU protocol. Users can refer to the structure below and use SCADA software to send Modbus commands to read back the current temperature, humidity and dew point temperature through the wireless communication of ZT-2550 or ZT-2570, or use DL-100TMS-ZT Utility through the ZT-2550 to read back the temperature and humidity information logged in the module, and save it as a CSV file (*.csv) or text file (*.txt).



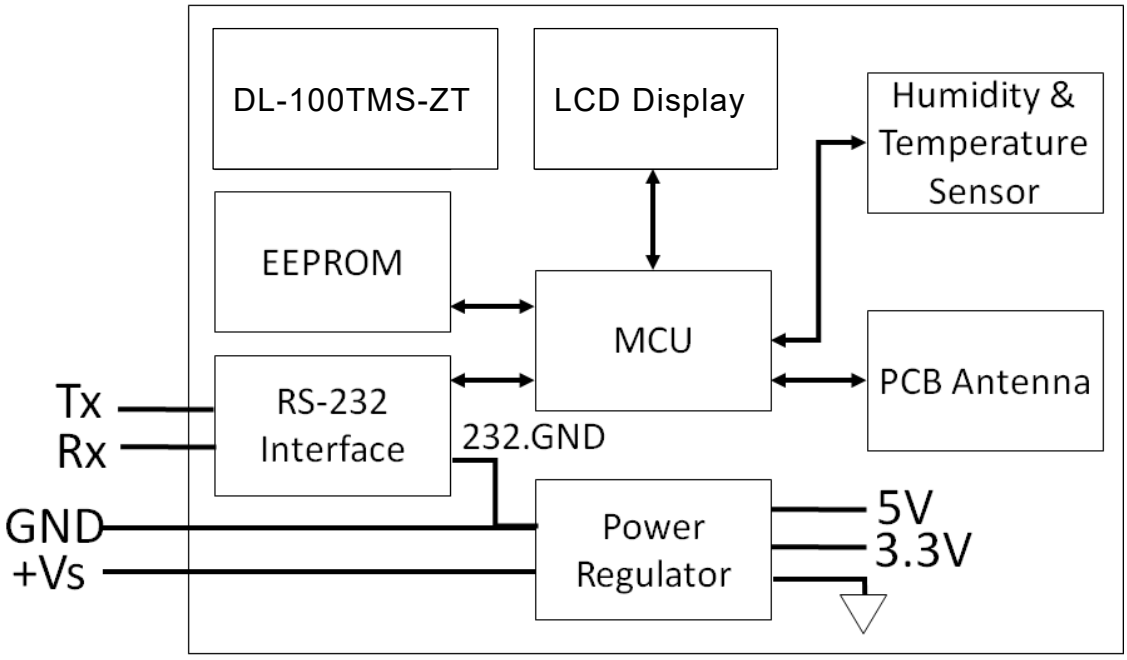
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1.2 Pin Assignments



COLOR	Pin Assignment
White	Tx
Red	VCC (+10~+30 VDC)
Black	GND
Green	Rx

1.3 Block Diagram



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2. Get started

2.1 Software download and module connection

The module supports two communication methods to connect to it, namely RS-232 and ZigBee. Users can use DL-100TMS-ZT Utility to read and write module parameters orread real-time temperature, humidity and dew point temperature information through one of the communication methods. Among them, the DL-100TMS-ZT Utility is linked as follows. Users can download and install it first:

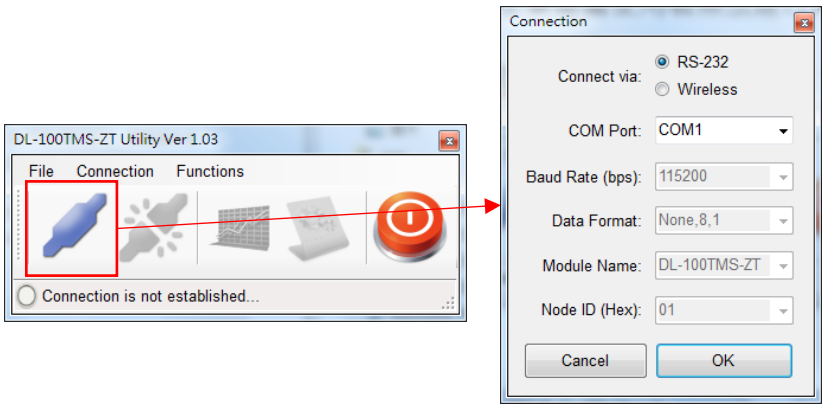
https://www.icpdas.com/tw/download/show.php?num=8942&model=DL-100TMS-ZT

In addition, the connection steps for these two communication methods are as follows:

- RS-232

  This communication method is mainly used when the user cannot perform wireless communication (for example: the wireless parameters of the module are not sure), so the fixed baud rate 115200, none, 8, 1 and Modbus station number 1 can be used to communicate with the module. Steps as follows:

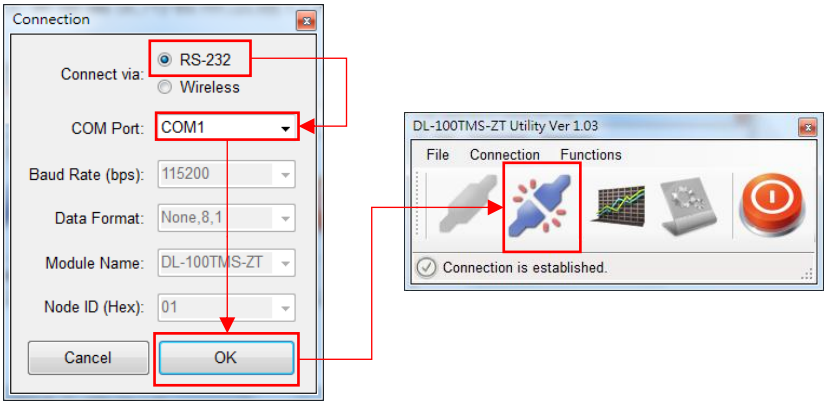
  - Step 1: Connect RS-232 to the TX, RX and GND pins of the module.
  - Step 2: After opening the Utility and clicking the Connection button, the "Connection" window will pop up.



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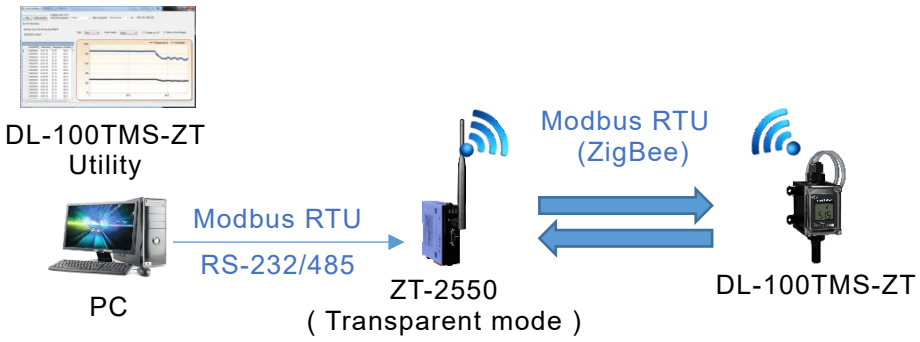
➢ Step 3: Select RS-232 and the COM Port to be used and click the OK button.

If  appears, the connection is successful. (Note: Each manufacturer may have different definitions of the TX and RX pins of RS-232. If the connection fails, you can try to swap the TX and RX pins and try again)



- Wireless communication

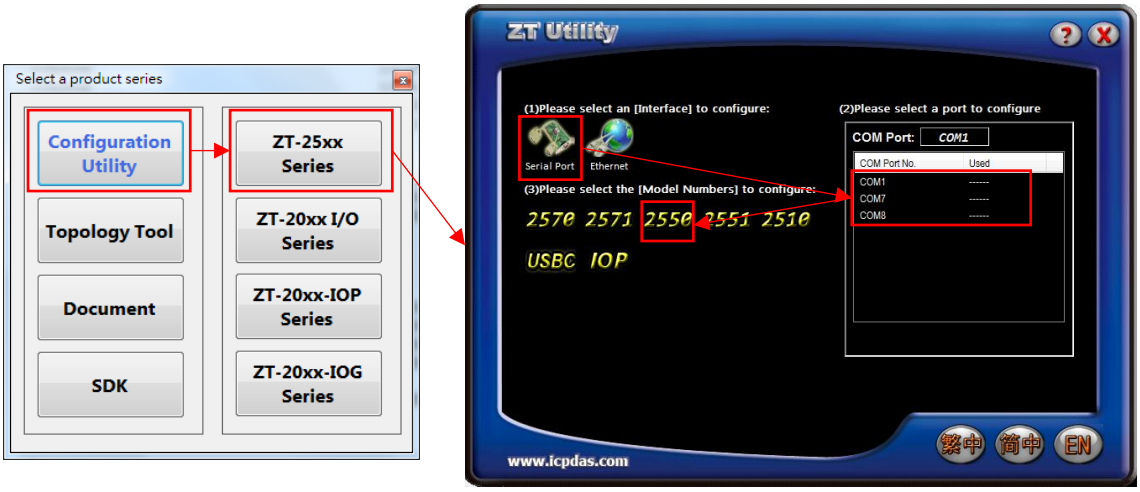
This communication method is through the relevant parameters of the wireless read-write module, as shown in the structure below. The DL-100TMS-ZT Utility needs to communicate with the DL-100TMS-ZT through the ZT-2550, so the ZT-2550 module needs to be set first, and then use DL-100TMS-ZT Utility to read and write the relevant parameters of DL-100TMS-ZT.



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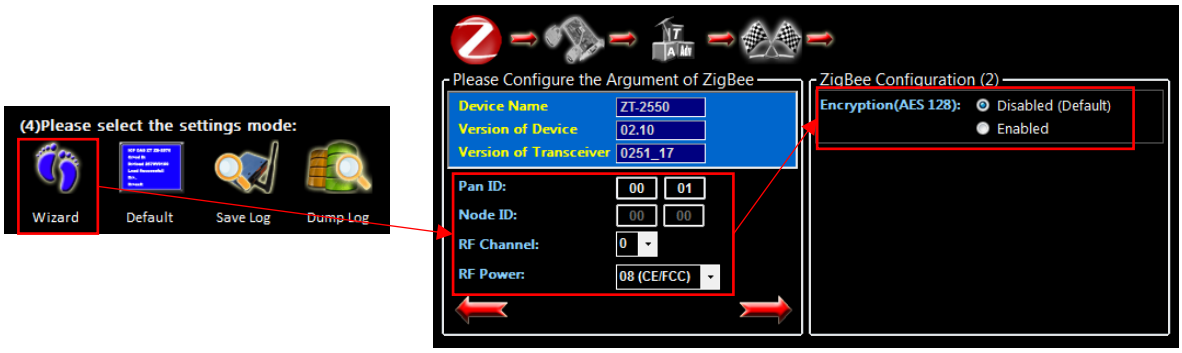
The setting steps for ZT-2550 are as follows:

- Step 1: Download and install "ZT-2000 Configuration Utility" from the link below.
  https://www.icpdas.com/tw/download/show.php?num=6637&model=ZT-2550
- Step 2: Power off the ZT-2550, turn the dip switch next to the terminal block to ZBSET, and then power on the ZT-2550 again.
- Step 3: Connect RS-232 or RS-485 between the PC and ZT-2550, open the ZT-2000 Configuration Utility on the PC, and select the COM port to communicate.



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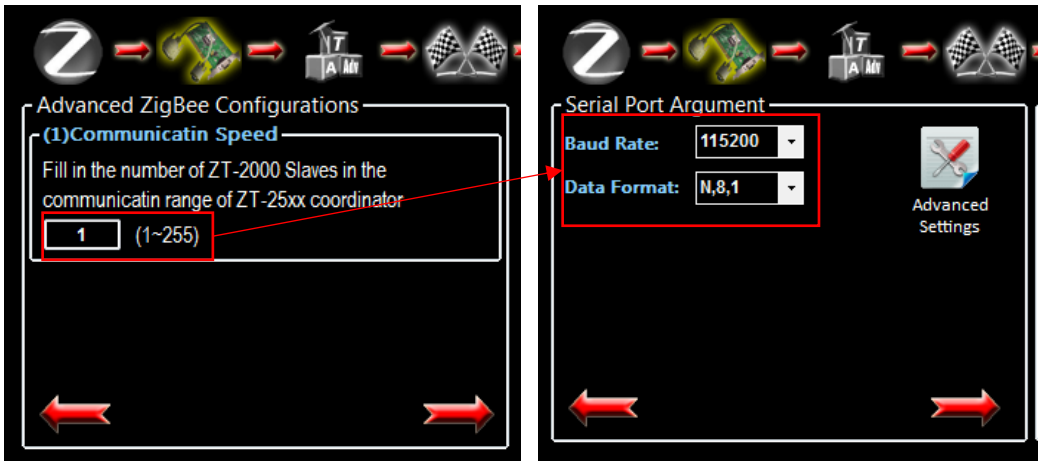
➢ Step 4: Set the wireless communication parameters of ZT-2550. In addition, the wireless parameter default values of DL-100TMS-ZT are as follows. When using DL-100TMS-ZT for the first time, the Pan ID and RF Channel of ZT-2550 must be the same as DL-100TMS-ZT.



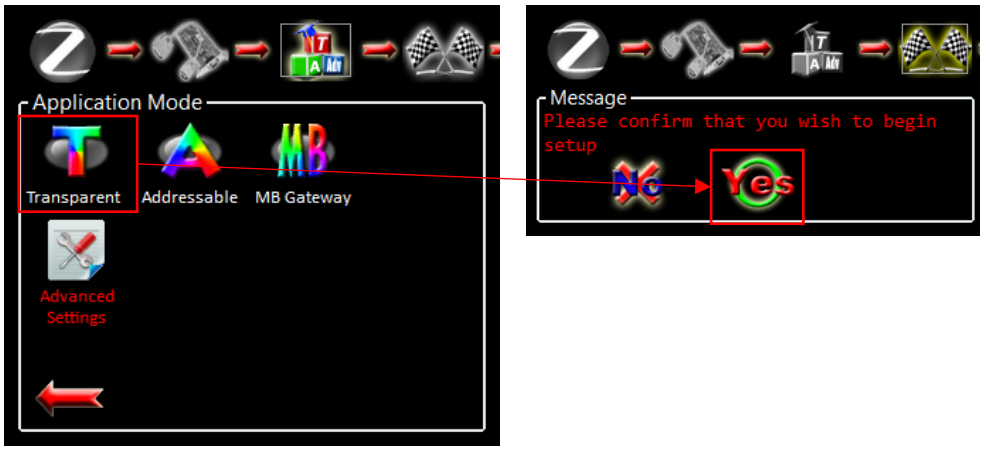
DL-100TMS-ZT		
Parameter name	Default value	Description
PAN ID	0x0001	The group number of the ZigBee wireless network, the settable range of DL-100TMS-ZT is 0x0000~0x00FF. (Note) The wireless modules need to be set to the same group to communicate.
Node ID	0x0001	The node number of the ZigBee wireless network cannot be repeated in the same wireless group. In addition, this node number is also the Modbus RTU station number of the module. The settable range of DL-100TMS-ZT is 0x0001~0x00FF.
RF Channel	0x00	The channel of ZigBee wireless network, the settable range of DL-100TMS-ZT is 0x00~0x0F. In addition, 4 channels including 0x04, 0x09, 0x0E and 0x0F will not overlap with Wi-Fi channels, so they are recommended channels with priority. (Note) The wireless modules need to be set to the same channel to communicate.
RF Power	0x08	Wireless transmission power, the settable range of DL-100TMS-ZT is 0x00~0x0F. Among them, 0x08 is about 11±1dBm and 0x0F is about 18±1dBm.
Encryptions (AES 128)	Disable	Encryption function of wireless packets. (Note) When DL-100TMS-ZT receives the first wireless packet from ZT-2550, it will determine whether the wireless packet is encrypted, and then automatically enable or disable the encryption function of the wireless packet. Therefore, DL-100TMS-ZT does not require additional to set encryption function..

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- Step 5: Set the relevant parameters of ZT-2550 in RS-232 or RS-485. in addition,
  - Baud Rate: Including 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps and other values, it is recommended to use 115200bps.
  - Data Format: Since DL-100TMS-ZT Utility only supports N, 8, 1, please select N, 8, 1.



- Step 6: Select the communication mode of ZT-2550, please click Transparent.



- Step 7: Power off the ZT-2550 and switch the dip switch next to the terminal block to RUN. Then power on the ZT-2550 again and confirm that the ZBNET (LED green light) is always on.

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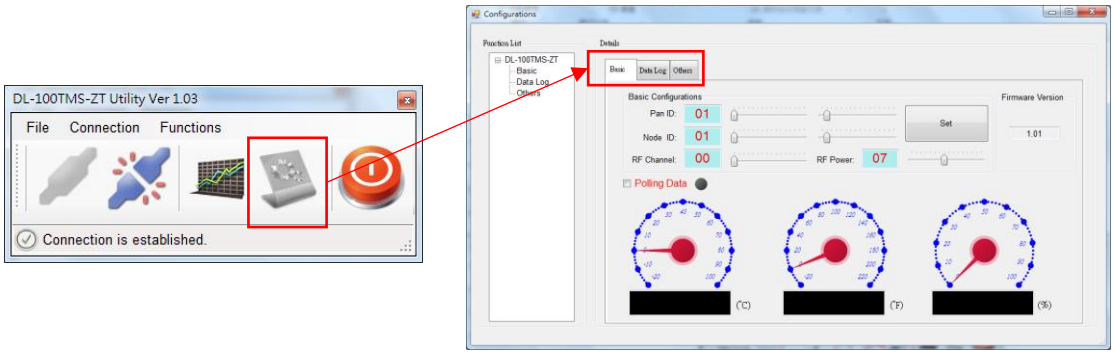
- Step 8: Power on the DL-100TMS-ZT again and confirm the wireless connection symbol on the LCD screen.

Wireless connection symbol	Description
	There are 4 wireless signal bars in total. As long as 1 signal bar appears, the connection is successful. In addition, the greater the number of signal bars, the better the signal. It is recommended to have at least 2 signal bars when deploying at the site. (Note) Updated every 16 seconds.
	Wireless signal timeout. This symbol indicates that the wireless signal is disconnected.

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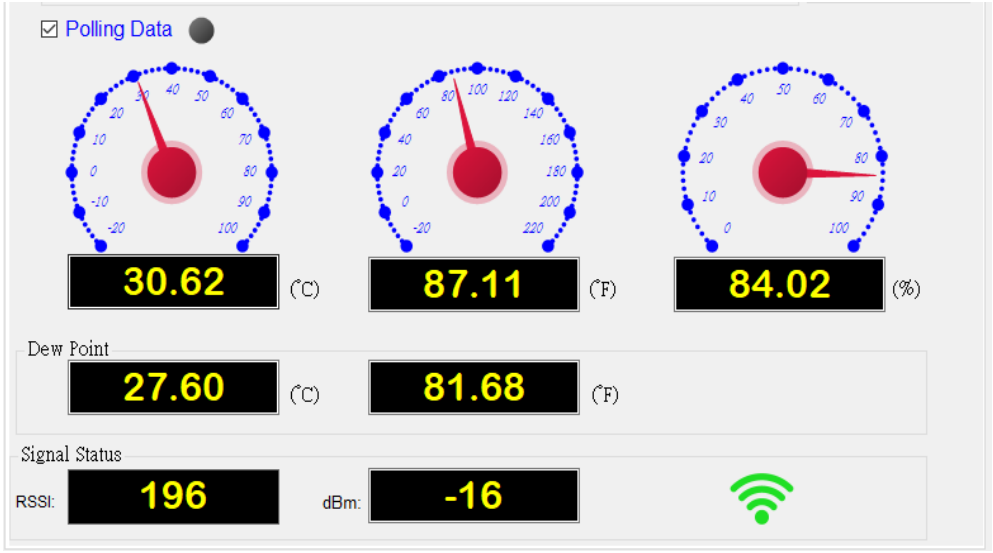
2.2 Module parameter setting

After the DL-100TMS-ZT Utility is successfully connected to the module in Section 3.1, you can click the "Configurations" button to open the "Configuration" window, as shown in the figure below. This window can be divided into three categories: Basic, Data Log and Others. Page tabs are explained in order as follows.



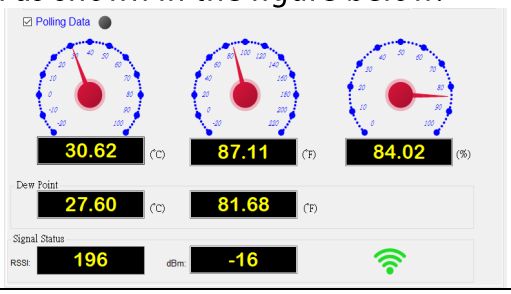
- Basic tab

This tab is mainly used to set the wireless communication parameters of DL-100TMS-ZT, as explained below.



Parameter name	Description
PAN ID	The group number of the ZigBee wireless network, the settable range of DL-100TMS-ZT is 0x0000~0x00FF. (Note) The wireless modules need to be set to the same group to communicate.
Node ID	The node number of the ZigBee wireless network cannot be repeated in the same wireless group. In addition, this node number is also the Modbus RTU station number of the module. The settable

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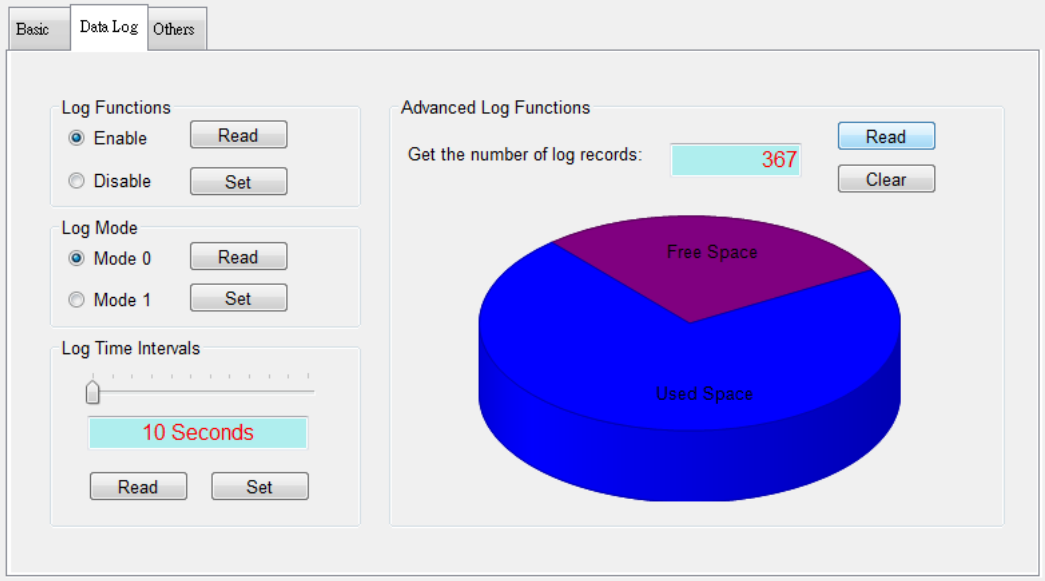
	range of DL-100TMS-ZT is 0x0001~0x00FF, and the default value is 0x0001.
RF Channel	The channel of ZigBee wireless network, the settable range of DL-100TMS-ZT is 0x00~0x0F, and the default value is 0x00. In addition, 4 channels including 0x04, 0x09, 0x0E and 0x0F will not overlap with Wi-Fi channels, so they are recommended channels with priority. (Note) The wireless modules need to be set to the same channel to communicate.
RF Power	Wireless transmission power, the settable range of DL-100TMS-ZT is 0x00~0x0F, and the default value is 0x07. Among them, 0x07 is about 11±1dBm and 0x0F is about 18±1dBm.
Firmware Version	Firmware version of DL-100TMS-ZT.
	When Polling Data is enabled, the utility reads back the current temperature, humidity, dew point temperature, and signal status, and displays them as shown in the figure below. 

In addition, when DL-100TMS-ZT receives the first wireless packet from ZT-2550, it will determine whether the wireless packet is encrypted, and then automatically enable or disable the encryption function of the wireless packet, so there is no need to set additional encryption functions. Among them, if DL-100TMS-ZT receives the first wireless packet from ZT-2550 and finds that the encryption status of the two modules is different, DL-100TMS-ZT will not respond to this wireless packet, but will directly switch encryption status, it will not respond until the next time it receives a wireless packet with the same encryption status.

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- Data Log tab

This tab is mainly used to set the data recording parameters of DL-100TMS-ZT, as explained below.

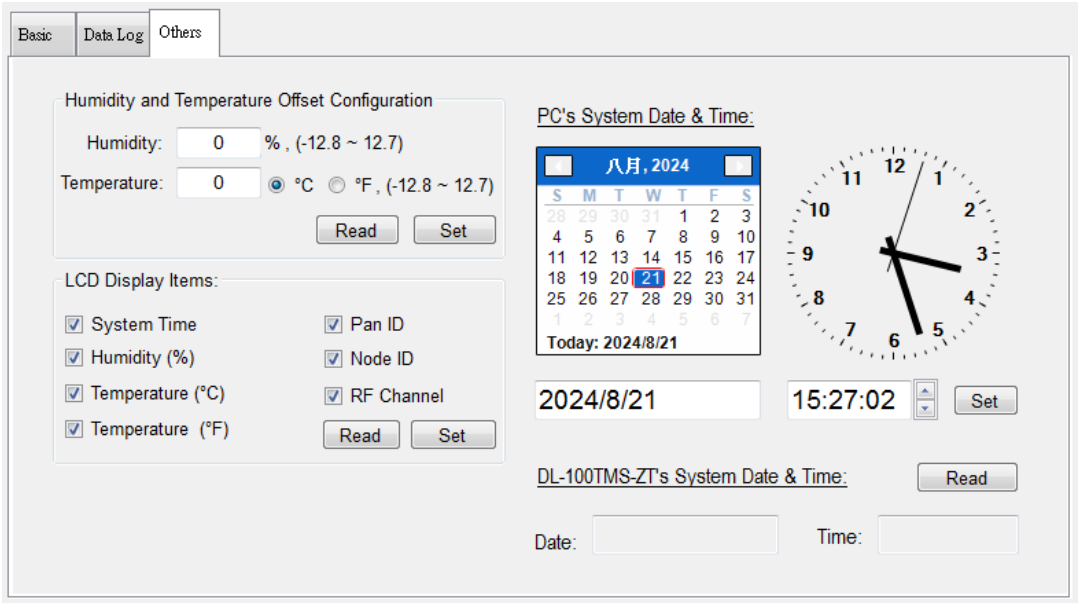


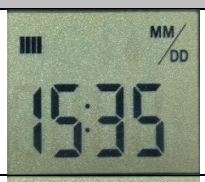
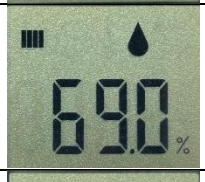
Parameter name	Description	
Log Functions	Whether to enable the logging function, the default value is Disable. In addition, if the module is powered off, the internal time will stop and the logging function will be automatically disabled. Therefore, the logging function needs to be re-enabled after the module is powered on. (Note) Same as Modbus address 00257 in Section 3.2.	
Log Mode	Logging mode, the default value is Mode 0. (Note) Same as Low byte at Modbus address 365525 in Section 3.2.	
	Mode	Description
	0	In fill mode, data logging will stop when the space is full, and a maximum of 510 records of temperature and humidity can be recorded.
	1	Loop mode, automatically overwrites the oldest log when the space is full.
Log Time Intervals	The logging time intervals include 10 seconds, 20 seconds, 30 seconds, 1 minute, 5 minutes, 10 minutes, 30 minutes, 1 hour, 2 hours, 6 hours, 12 hours and 24 hours. The default value is 10 Second. (Note) Same as Low byte at Modbus address 365526 in Section 3.2.	
Advanced Log Functions	When the logging mode is fill mode (mode 0), the number of records can be read. (Note) Same as Modbus address 365524 in Section 3.2.	

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- Others tab

This tab is mainly used to set other parameters of DL-100TMS-ZT, as explained below.



Parameter name	Description		
Humidity and Temperature Offset Configuration	Manual offset value of temperature and humidity. Users can use this parameter to compensate the value of temperature and humidity. The unit is 0.1 and the default value is 0. (Note) Same as Modbus address 365527 in Section 3.2.		
LCD Display Items	LCD screen display items. After checking and setting items, the screen will display one item in turn every second. (Note) Same as the High byte at Modbus address 365526 in Section 3.2.		
	Items	Description	
	System Time		This screen indicates that the system time of the module is 15:35.
	Humidity (%)		This screen indicates that the current humidity is 69.0%.
	Temperature (℃)		This screen indicates that the current temperature is 23.6°C.

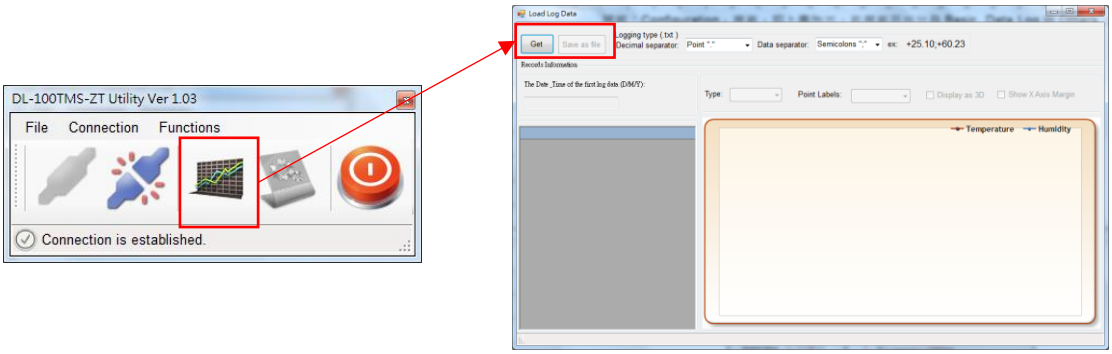
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	Temperature (℉)		This screen indicates that the current temperature is 74.5℉.
	Dew point (℃)		This screen indicates that the current dew point is 21.2°C.
	Dew point (℉)		This screen indicates that the current dew point is 70.1℉.
	Pan ID		This screen indicates that the Pan ID is 0x34.
	Node ID		This screen indicates that the Node ID is 0x01.
	RF Channel		This screen indicates that the RF Channel is 0x0E.
PC's System Date & Time	This is the date and time of the PC. Click the "Set" button to write this date and time to DL-100TMS-ZT. (Note) Same as Section 3.2 at Modbus address 365530~365532.		
DL-100TMS-ZT's System Date & Time	Click "Read" to read the current date and time of DL-100TMS-ZT. (Note) Same as Modbus address 365533 in Section 3.2.		

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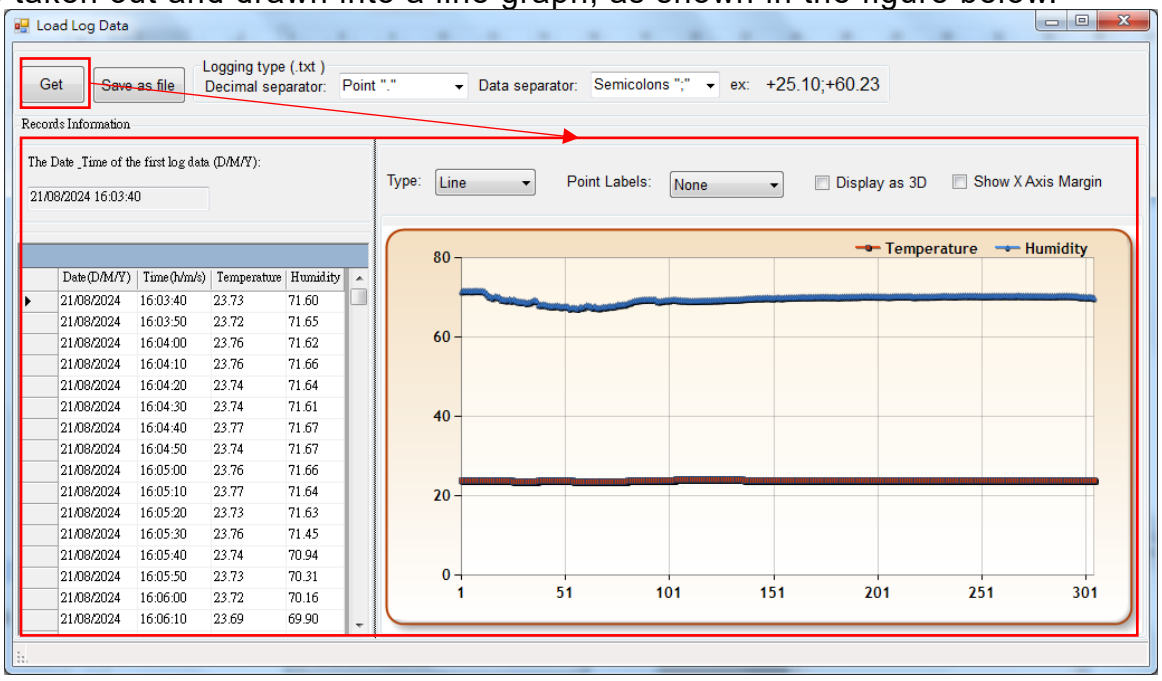
2.3 Logging Data

After the DL-100TMS-ZT Utility is successfully connected to the module in Section 3.1, you can click the "Load log data" button to open the "Load log data window, as shown in the figure below. This window mainly consists of “Get data” and “Save as file” consists of two functions, which are explained in sequence as follows.



- Get data

After clicking the Get button, the temperature and humidity logs in the module can be taken out and drawn into a line graph, as shown in the figure below.



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- Save as file

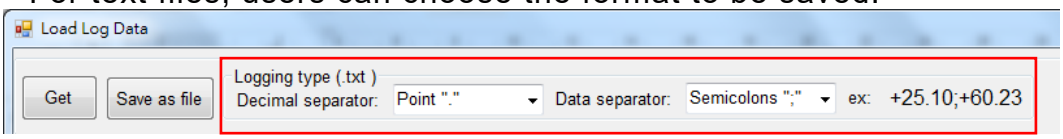
After getting the log, click the 

button to save the log as a CSV file (*.csv) or text file (*.txt). The storage format is as follows.

- For CSV files, the decimal point commonly used in the region is a point "." or a comma ",", and different delimiters are automatically selected in the log.

Format	Decimal point	Separator	Example
(A)	Point 「 . 」	Comma 「 , 」	23/07/2024,09:52:10,+25.16,+63.8
(B)	Comma 「 , 」	Semicolon 「 ; 」	23/07/2024;09:52:10;+25,16;+63,8

- For text files, users can choose the format to be saved.



Format	Decimal point	Separator	Example
(A)	Point 「 . 」	Space 「 」	23/07/2024 09:52:10 +25.16 +63.8
(B)		Semicolon 「 ; 」	23/07/2024;09:52:10;+25.16;+63.8
(C)	Comma 「 , 」	Space 「 」	23/07/2024 09:52:10 +25,16 +63,8
(D)		Semicolon 「 ; 」	23/07/2024;09:52:10;+25,16;+63,8

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3. Modbus RTU Protocol

3.1 Format description

The Modbus protocol was originally developed by Modicon Inc. for Modicon controllers. For detailed information, please refer to http://www.modbus.org to find more information.

Byte 0	Byte 1	Byte 2~3	Byte 4~n	Byte n+1~n+2
Station number	Function code	Reference Address	Data length and content	CRC16

Function code	Description	Address
0x01	Read coils	0xxxx
0x02	Read discrete inputs	1xxxx
0x03	Read multiple registers	4xxxx
0x04	Read multiple input registers	3xxxx
0x05	Write single coils	0xxxx
0x06	Write single registers	4xxxx
0x0F	Write multiple coils	0xxxx
0x10	Write multiple registers	4xxxx

If the module receives an illegal message, it will respond with a message in the following format. In addition, if the station number or CRC16 is incorrect, the module will not respond to messages and actions.

	Byte 0	Byte 1	Byte 2		Byte 3~4
Description	Station number	Function code	Exception code		-
Value	0x01~0xFF	Function code + 0x80	0x01	Illegal function code	CRC16
			0x02	Illegal address	
			0x03	Illegal data value	

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3.2 Modbus table

Address (base1)	Address (base0)	Function code	Property	Data type	Description	Remark
00257	256 (0x0100)	01, 02 05, 15	R/W	Uint8	Enable or disable logging function.	The default value is 0 0: Disabled. 1: Enabled.
00258	257 (0x0101)	01, 02 05, 15	R/W	Uint8	Whether to reset the log index value to 0. (Note) The number of records is at address 365524.	The default value is 0. 0: No. 1: Yes.
10260	259 (0x0103)	01, 02	R	Uint8	Has the module been rebooted?	The default value is 1. (Note) The first reading after power-on is fixed as 1, and subsequent readings are fixed as 0. 0: No. 1: Yes.

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Address (base1)	Address (base0)	Function code	Property	Data type	Description	Remark
30001	0 (0x0000)	03, 04	R	Int16	Humidity, unit %.	The value divided by 100 is the humidity (%).
30002	1 (0x0001)	03, 04	R	Int16	Temperature, unit °C.	Divide the value by 100 to get the temperature (°C).
30003	2 (0x0002)	03, 04	R	Int16	Temperature, unit ℉.	Divide the value by 100 to get the temperature (℉).
30004	3 (0x0003)	03, 04	R	Int16	Dew point ,unit °C	Divide the value by 100 to get the dew point temperature (°C).
30005	(0x0004)	03, 04	R	Int16	Dew point ,unit ℉	Divide the value by 100 to get the dew point temperature (°F).
30501	500 (0x01F4)	03,04	R	uint16	LQI(Link Quality Indicator)	The larger the value, the better the link quality. This value can be used as a reference for communication stability.
30503	502 (0x01F6)	03, 04, 06	R/W	Uint16	RF Power value.	The larger the value, the higher the wireless power. The settable range is 0x0000~0x000F, and the new value will be enabled after the module is restarted. Among them, 0x08 is about 11±1dBm and 0x0F is about 18±1dBm.
365521	65520 (0xFFF0)	03, 04	R	Uint16	Firmware version.	[High byte] Major version. [Low byte] Minor version. For example: 0x0102 means v1.02.
365522	65521 (0xFFF1)	03, 04	R	Uint16	Module name.	[High byte] Fixed character D (0x44) [Low byte] Fixed character L (0x4C)
365523	65522 (0xFFF2)	03, 04	R	Uint16		[High byte] Fixed character Z (0x5A) [Low byte] Fixed character T (0x54)
365524	65523 (0xFFF3)	03, 04	R	Uint16	Log the index value.	The value range is 0~509, with a total of 510 entries.

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Address (base1)	Address (base0)	Function code	Property	Data type	Description	Remark
365525	65524 (0xFFF4)	03, 04, 06, 16	R/W	Uint16	[High byte] Module station number (same as Node ID).	The value range is 1~255.
					[Low byte] Log Mode.	0: Fill mode, data logging will stop when the space is full, and a maximum of 510 temperature and humidity logs can be logged.
						1: Loop mode, the oldest log is automatically overwritten when the space is full.
365526	65525 (0xFFF5)	03, 04, 06, 16	R/W	Uint16	[High byte] LCD display items	The value range is 0x00~0x7F, where bit is 0 means disabled and bit is 1 means enabled. Bit7: Reserved, fixed to 0. Bit6: Display Node ID. Bit5: Display Pan ID. Bit4: Display RF Channel. Bit3: Display system time. Bit2: Display humidity (%). Bit1: Display temperature (℉). Bit0: Display temperature (℃).

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<table>
<tr><td></td><td></td><td></td><td></td><td></td><td>[Low byte]
Logging time interval.</td><td colspan="2">The value range is 0x00~0x0B.</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>Value</td><td>Interval</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x00</td><td>10 seconds</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x01</td><td>20 seconds</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x02</td><td>30 seconds</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x03</td><td>1 minute</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x04</td><td>5 minutes</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x05</td><td>10 minutes</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x06</td><td>30 minutes</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x07</td><td>1 hour</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x08</td><td>2 hours</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x09</td><td>9 hours</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x0A</td><td>12 hours</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>0x0B</td><td>24 hours</td></tr>
<tr><td rowspan="2">365527</td><td rowspan="2">65526
(0xFFF6)</td><td rowspan="2">03, 04,
06, 16</td><td rowspan="2">R/W</td><td rowspan="2">Int16</td><td>[High byte]
Humidity (%) offset value.</td><td colspan="2">The value range is -12.8% ~ 12.7%, and the unit is 0.1%.</td></tr>
<tr><td>[Low byte]
Temperature (℃) offset value.</td><td colspan="2">The value range is -12.8℃ ~ 12.7℃, and the unit is 0.1℃.</td></tr>
<tr><td>365528</td><td>65527
(0xFFF7)</td><td>03, 04,
06, 16</td><td>R/W</td><td>Word</td><td>Pan ID</td><td colspan="2">The value range is 0x0000~0x3FFF. However, since the LCD screen can only display Low byte, it is recommended to use 0x0000~0x00FF.</td></tr>
<tr><td>365529</td><td>65528
(0xFFF8)</td><td>03, 04,
06, 16</td><td>R/W</td><td>Word</td><td>RF Channel</td><td colspan="2">The value range is 0x0000~0x000F.</td></tr>
</table>

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Address (base1)	Address (base0)	Function code	Property	Data type	Description	Remark
365530	65529 (0xFFF9)	03, 04 06, 16	R/W	Word	Base year and month values	[High byte] year [Low byte] month
365531	65530 (0xFFFA)	03, 04 06, 16	R/W	Word	Base date and hour value	[High byte] Date [Low byte] hours
365532	65531 (0xFFFB)	03, 04 06, 16	R/W	Word	Base minutes and seconds values	[High byte] minutes [Low byte] seconds
365533	65522 (0xFFFC)	03, 04	R	Word	Current year and month values	[High byte] Current year [Low byte] Current month
365534	65533 (0xFFFD)	03, 04	R	Word	Current date and hour value	[High byte] Current date [Low byte] Current hour
365535	65534 (0xFFFE)	03, 04	R	Word	Current minutes and seconds values	[High byte] Current minute [Low byte] Current seconds

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3.3 Example

This section provides examples of the Modbus table as follows:

➢ Read the log function whether is enabled or disabled

	Transmit / Receive data	Description	
Request	01 01 01 00 00 01 FC 36	Using function code 0x01 to read address 256 (0x0100) to confirm whether the logging function is enabled?	
		Station number	0x01
		Function code	0x01
		Starting address	0x0100
		Bit Count	0x0001
		CRC16	0xFC36
Response	01 01 01 00 51 88	The Bit value of the response is 0x00, it means that the logging function has been disabled. (Note) If the Bit value is 0x01, it means the logging function is enabled.	
		Station number	0x01
		Function code	0x01
		Byte count	0x01
		Bit value	0x00
		CRC16	0x5188

➢ Write and enable logging function

	Transmit / Receive data	Description	
Request	01 05 01 00 FF 00 8D C6	Using function code 0x05 to write address 256 (0x0100) to enable the logging function. (Note) If Value is written as 0x0000, it is disabled.	
		Station number	0x01
		Function code	0x01
		Starting address	0x0100
		Value	0xFF00
		CRC16	0x8DC6
Response	01 05 01 00 FF 00 8D C6	The value of the response is same as the command, it means that the writing is successful.	
		Station number	0x01
		Function code	0x01
		Starting address	0x0100
		Value	0xFF00
		CRC16	0x8DC6

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➢ Read humidity, temperature and dew point

	Transmit / Receive data	Description	
Request	01 04 00 00 00 05 30 09	Using function code 0x04 to read addresses 0~4 (0x0000~0x0004) to confirm the current humidity, temperature and dew point temperature.	
		Station number	0x01
		Function code	0x04
		Starting address	0x0000
		Word Count	0x0005
		CRC16	0x3009
Response	01 04 0A 1C 1C 0A 0B 1E 93 07 EA 1A BF 5F 5B	The response Values are 6918 (0x1B06), 2492 (0x09BC), and 7686 (0x1E06), it means that the humidity is 69.18%, 24.92℃, and 76.86℉.	
		Station number	0x01
		Function code	0x04
		Byte count	0x0A
		Value	0x1C1C、0x0A0B、0x1E93、0x07EA、0x1ABF
		CRC16	0x5F5B

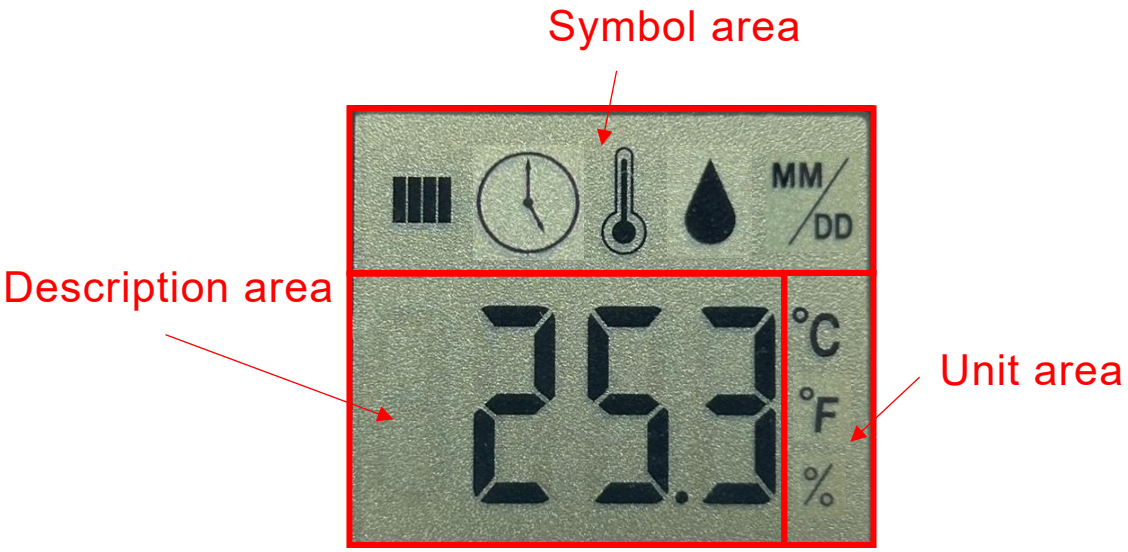
➢ Write and modify LCD display items and logged time intervals

	Transmit / Receive data	Description	
Request	01 06 FF F5 F5 03 AE BD	Using function code 0x06 to write to address 65525 (0xFFF5) to modify the LCD display item and the logging time interval.	
		Station number	0x01
		Function code	0x06
		Starting address	0xFFF5
		Value	0xF503
		CRC16	0xAEBD
Response	01 06 FF F5 F5 03 AE BD	The value of the response is the same as the command, indicating that the writing is successful. Among them, 0xF5 means that the LCD displays temperature (°C), humidity (%), dew point temperature, RF Channel, Pan ID and Node ID. In addition, 0x03 means that the logging time interval is 1 minute.	
		Station number	0x01
		Function code	0x06
		Starting address	0xFFF5
		Value	0xF503
		CRC16	0xAEBD

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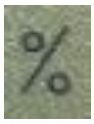
4. LCD screen information

LCD screen information can be divided into three areas, namely the symbol area, description area and unit area, as described below.



Area	Symbol	Description
Symbol area		There are 4 wireless signal bars in total. As long as 1 signal bar appears, the connection is successful. In addition, the greater the number of signal bars, the better the signal. It is recommended to have at least 2 signal bars when deploying at the site. (Note) Updated every 16 seconds。
		Wireless signal timeout. This symbol means that the wireless signal is disconnected.
		The temperature symbol means that the value displayed in the description area is temperature.
		The humidity symbol means that the value displayed in the description area is humidity.
		The dew point temperature symbol means that the value displayed in the description area is dew point temperature.

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		The date symbol means that the value in the description area is the current module time.
Description area		Numeric type, means the value of temperature, humidity or dew point temperature.
		Time type, means the current module time.
		Pan ID, means Pan ID is 0x34.
		Node ID, means Node ID is 0x01.
		RF Channel, means RF Channel is 0x0E.
		Serr, “Sensor Error” means that the internal temperature and humidity sensor is abnormal.
Unit area		The Celsius symbol indicates that the unit of the value displayed in the description area is °C. It can be used for temperature or dew point temperature.(℃).
		The Fahrenheit symbol indicates that the unit of the value displayed in the description area is °F. It can be used for temperature or dew point temperature. (℉).
		The percentage symbol means that the value displayed in the description area is humidity (%).

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